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polling the communication stations to transmit data over the shared communication medium for [particular ones of] the plurality of communication sessions according to [a] the polling [sequence] pattern;

monitoring data transmitted by the communication stations in response to the polling; and
[adaptively allocating] adapting assignment of the communication resources in accordance with the [monitored transmissions] monitoring, including adapting the polling pattern according to said monitoring.

3. (Once amended) The method of claim [2] 1 further comprising:
accepting a request to establish a new communication session [in the quality of service class];

admitting the new session if [its data rate] a quality of service requirement for said new session can be provided without exceeding a limit on available communication capacity on the shared communication medium; and

rejecting the new session if [its data rate] the quality of service requirement cannot be provided without exceeding the limit on available communication resources.

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4. (Once amended) The method of claim [2] 1 wherein assigning communication resources in accordance with the [data rate] quality of service requirements includes assigning said communication resources according to [minimum required and a maximum desired] data rate[s] requirements for the plurality of communication sessions [in the quality of service class].

5. (Once amended) The method of claim [2] 1 wherein assigning communication resources in accordance with the [data rate] quality of service requirements includes [required] assigning said communication resources according to maximum intervals between polling of the plurality of sessions [in the quality of service class].

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6. (Once amended) The method of claim 4 wherein assigning communication resources includes:

determining a subset of the plurality of communication sessions [in the quality of service class] that can be provided with [their minimum required] data rate requirements for said sessions; and

assigning data rates to each of the subset of sessions in accordance with [their minimum required data rates and their maximum desired data rates] said data rate requirements.

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12. (Once amended) The method of claim [2] 1 wherein [polling is performed in] the polling pattern includes a periodic cycle [and] such that during each period of the cycle a subset of the communication sessions [in the quality of service class] are polled in accordance with their allocated communication resources.

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14. (Once amended) The method of claim 1 wherein polling the communication stations to transmit data for [particular ones of] the plurality of communication sessions includes: assembling a data message identifying at least one of the communication sessions; and transmitting the data message to one of the communication stations using a wireless transmitter; and wherein monitoring data [transmissions] transmitted by the communication stations includes receiving the data transmissions using a wireless receiver.

15. (Once amended) An apparatus for controlling media access by a plurality of stations configured to communicate over a shared communication medium in a communication [network] system comprising:
means for assigning communication resources in accordance [the data rate] with quality of service requirements of a plurality of communication sessions, including a means for determining a polling pattern;

means for polling the communication stations to transmit data over the shared communication medium for [particular ones of] the plurality of communication sessions according to [a] the polling [sequence] pattern;

means for monitoring data [transmissions] transmitted by the communication stations in response to the polling; and

means for adapting [the polling sequence] assignment of the communication resources in accordance with [the assigned communication resources and] the [monitored data transmissions] monitoring, including adapting the polling pattern according to said monitoring.

16. (Once Amended) The apparatus of claim 15 further comprising:

means for accepting a request to establish a new communication session over the shared communication medium;

means for admitting the new communication session if [its data rate requirement] a quality of service requirement for said session can be provided without exceeding a limit on available communication resources; and

means for rejecting the new session if [its data rate] the quality of service requirement cannot be provided without exceeding the limit on available communication resources.

17. (Once amended) Software stored in a computer readable medium for causing a computer system to perform the functions of:

assigning communication resources [to a set of communication sessions] in accordance with [data rate] quality of service requirements of [the] a plurality of communication sessions on a shared communication medium, including determining a polling pattern;

polling communication stations to transmit data for [particular ones of] the plurality of communication sessions according to [a] the polling [sequence] pattern;

monitoring data [transmissions] transmitted over the shared communication medium by the communication stations in response to the polling; and

[adaptively allocating] adapting assignment of the communication resources in accordance with the [monitored data transmissions] monitoring, including adapting the polling pattern according to said monitoring.

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19. (Once amended) The software of claim [18] 17 further causing the computer system to perform the functions of:

accepting a request to establish a new communication session;

admitting the new communication session if [its data rate requirement] a quality of service requirement for said session can be provided without exceeding a limit on available communication resources; and

rejecting the new session if [its data rate] the quality of service requirement cannot be provided without exceeding the limit on available communication resources.

20. (Once amended) The software of claim [18] 17 wherein [a data rate] the quality of service requirement for [a] the new communication session includes a minimum required and a maximum desired data rate.

21. (Once amended) An apparatus for polling a plurality of stations configured to communicate over a shared communication medium in a communication [network] system comprising:

a polling manager [which] configured to send[s] polling messages to the stations [in the network] in accordance with a polling [sequence] pattern;

a transmitter coupled to the polling manager [which] configured to accept[s] the polling messages from the polling manager and to transmits the messages over the shared communication medium to the stations; and

a receiver coupled to the polling manager [which] configured to receive[s] messages over the shared communication medium from the stations and to provide[s] monitoring information to the polling manager;

wherein the polling manager is configured to adapt[s] the polling sequence in accordance with the monitoring information.

22. (Once Amended) The apparatus of claim 21 further comprising a resource manager coupled to the polling manager [which] configured to accept[s] requests to admit

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communication sessions and to provide[s] resource allocations for admitted sessions to the polling manager.

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24. (Once amended) The method of claim 1 further comprising receiving statistics related to the communication session and [adaptively allocating] adapting assignment of the communication resources further includes allocating the resources in accordance with the received statistics.

25. (Once amended) The method of claim 24 wherein the statistics related to the session includes a queue length for a session, and wherein [adaptively allocating] adapting assignment of the communication resources includes adapting the polling sequence according to the queue length.

Please add new claims 26-46 as follows:

--26. The method of claim 14 wherein assigning the communication resources is performed at a designated arbiter station, and wherein transmitting the data message includes transmitting the data message from the arbiter station to one or more of the communication stations.--

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--27. The method of claim 26 wherein assigning the communication resources is in addition performed at one or more of the communication stations, and wherein the method further comprises designating one of said one or more communication stations to assume the role of the arbiter station. --

--28. The method of claim 1 wherein assigning communication resources in accordance with the quality of service requirements includes assigning said communication resources according to maximum delay requirements of the plurality of communication sessions.--

--29. The method of claim 1 wherein assigning communication resources in accordance with the quality of service requirements includes assigning said communication resources according to security requirements of the plurality of communication sessions.--

--30. The method of claim 1 wherein polling the communication stations to transmit data includes:

assembling a data message identifying a two or more communication sessions originating at two or more of the communication stations and identifying time intervals during which said communication stations are permitted to transmit data over the shared communication medium; and

transmitting the data message to said two or more communication stations. --

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--31. The method of claim 1 wherein assigning communication resources includes assigning communication resources for each of a plurality of communication channels one the shared communication medium. --

--32. The method of claim 31 wherein assigning communication resources for each of the plurality of communication channels includes determining a separate polling pattern for each of said channels. --

--33. The method of claim 1 wherein the communication system includes a distributed telecommunication system. --

--34. The method of claim 33 wherein the distributed telecommunication system is a wireless local loop system. --

--35. In a communication system in which a plurality of stations share access to a communication network according to a multiple-access media access control protocol, a method for controlling access by the stations to said network comprising:

at an arbiter station that is coupled to the communication network, determining a polling

pattern for polling the plurality of stations;

transmitting polling messages from the arbiter station to each of the plurality of communication stations according to the polling pattern;

receiving the polling messages from at the plurality of stations; and

at each of the plurality of stations, using the received polling messages to determine times when to transmit onto the communication network, and at said determined times transmitting data onto the communication network using the multiple access media access control protocol. --

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--36. The method of claim 35 further comprising, at each of the plurality of stations, providing a software interface to a network layer protocol module, and accepting messages over said software interface from the network layer protocol module, and wherein determining the times when to transmit onto the communication network includes determining times when to transmit said accepted messages.--

--37. The method of claim 36 wherein transmitting data onto the communication network includes transmitting the accepted messages using an Ethernet protocol. --

--38. The method of claim 37 wherein the network layer protocol module includes an Internet Protocol (IP) module. --

--39. A method for media access control in a communication system which includes a plurality of communication stations which communicate over a shared communication medium comprising:

at two or more of the communications stations, assigning communication resources in accordance with quality of service requirements of a plurality of communication sessions between the stations, including determining a polling pattern;

from a designated one of the two or more communication stations, polling the stations to transmit data over the shared communication medium according to the polling pattern, and monitoring data transmitted by the stations in response to the polling; and

designating another of the two or more communication stations to perform the polling and monitoring in place of the previously designated station. --

--40. The method of claim 39 further comprising, at the designated communication station, adapting assignment of the communication resources in accordance with the monitored data transmissions, including adapting the polling pattern according to the monitored transmissions. --

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--41. A method controlling access to a shared communication resource, comprising:
determining a polling pattern for access to the shared communication resource;
polling a plurality of devices to transmit data over the shared communication resource according to the polling pattern; and
adapting the polling pattern according to communication requirements of the devices.--

--42. The method of claim 41 further comprising:
monitoring data transmissions from the plurality of devices over the shared communication resource in response to the polling; and
wherein adapting the polling pattern includes adapting said polling pattern based on the monitored data transmissions.--

--43. A communication apparatus comprising:
a shared communication resource;
a plurality of interfaces for coupling a plurality of devices to the shared communication resource;
a controller configured to transmit polling messages to the plurality of devices according to a polling pattern, to monitor communication sent in response to the polling messages, and to adapt the polling pattern according to the monitored communication.--

--44. The apparatus of claim 43 wherein the shared communication resource includes a data bus.--